

Arsenic in Private Drinking-Water Wells

1. What is arsenic?

Arsenic is an element that occurs naturally in rock and soil in many areas. It has been used commercially in products such as wood preservatives and pesticides.

2. How does arsenic get into well water?

Arsenic gets into well water through natural erosion. When underground water flows over rocks or soil that contain arsenic, the arsenic slowly dissolves into the water. Arsenic gets into well water primarily in this way.

3. Should I get my private water well sampled for arsenic?

Arsenic concentrations in groundwater are generally highest in the West and parts of the Midwest and Northeast. Please contact your local or state health department for a list of labs certified to test water for arsenic.

Labs can do a simple test to find out whether arsenic is in the water. In most areas, the cost of testing a sample of water for arsenic usually ranges from \$20 to \$35.

Because the amount of arsenic in well water can vary throughout the year, you should test more than once, at different times of the year.

4. What is the U.S. Environmental Protection Agency (EPA) standard for arsenic in drinking water of private wells?

EPA requires that public drinking water supplies have less than 10 parts per billion (ppb) of arsenic. EPA does not set drinking-water standards for private wells. However, persons who use water from wells that contain arsenic at levels greater than 10 ppb should consider ways of reducing their contact with the water.

5. Can arsenic in drinking water affect my health?

Studies conducted in other countries found harmful health effects in persons who regularly for many years drank water containing arsenic at 100 ppb to 300 ppb. Compared with other groups, more of these people developed several kinds of cancer (lung, liver, kidney, and prostate) and had darkening skin, thickening of the skin on palms of their hands and soles of their feet, skin cancer, and many small warts or corns.

A few studies found no harmful effects in persons in the United States who throughout their lifetimes drank water containing arsenic at levels of 50 ppb to 100 ppb.

Even though harmful health effects were not found in persons who drank water containing arsenic levels of 50 ppb to 100 ppb, reducing exposure to arsenic can reduce the risk of harmful health effects.

6. How can arsenic in my drinking-water well get into my body?

Arsenic in your drinking water can get into your body when you drink the water or use it to cook or prepare your food. You cannot breathe in the arsenic that is in your water. Arsenic does not very easily get into your body through your skin, so showering and bathing are not a problem unless you have very high levels, greater than 500 ppb. If you do have arsenic in your well water above 500 ppb, you should not drink it, cook with it, or shower or bath in it. You should call your local or state health department for advice.

7. How can I reduce my exposure to arsenic?

Several ways are available to reduce your exposure to arsenic in your well water. Each option has advantages and disadvantages that you should consider carefully.

- **Drink Bottled Water**
Buying bottled water is easy and effective. You may find it inconvenient but it is always a good first choice while you consider other options. Remember to check your bottled water supplier to ensure that they are providing you with a good, clean product.
- **Treat the Well Water**
Two major ways can remove arsenic from well water: 1) Point-of-use devices attached to your tap remove most of the arsenic from that tap. 2) Point-of-entry devices remove arsenic from your water before it enters the house so that all your taps provide clean water.

These systems can use **reverse osmosis, distillation,** or special **iron and aluminum units** to remove the arsenic. Other systems, such as water softeners and pitcher filters, *will not* remove arsenic. The effectiveness of a treatment system depends on how well it is maintained and the level of arsenic in your water. Reverse osmosis units tend to waste a lot of water and are less effective at higher arsenic levels. Choosing a system that has been tested and certified is important. The National Sanitation Foundation (NSF) International website has information on certified water-treatment systems at <http://www.nsf.org/>.

- **Put in a New Well**
Drilling a new well with appropriate precautions regarding location, depth and construction may provide water that has little or no detectable arsenic.

However, a new well is not guaranteed to be arsenic free. Arsenic levels in your new well may start low but could increase over time.

- **Connect to a Public Water Supply or Community Well**
Hooking up to a public water supply or community-owned well may be possible. These wells must be maintained and tested for compliance to federal and state standards that are protective of health. This option may be expensive or may not be available if you do not live near such a supply. Your local water utility will be able to tell you whether a connection to public water is available to you.

If you have arsenic in your water above 500 ppb, you should talk to your state or local health department before choosing an option.

You can find more information on arsenic at the following Web sites.

ATSDR's Toxicological Profile for Arsenic

<http://www.atsdr.cdc.gov/toxprofiles/tp2.html>

Arsenic in Drinking Water; EPA

<http://www.epa.gov/eptpages/watwaterarsenic.html>

USGS "Arsenic in Ground Water"

<http://co.water.usgs.gov/trace/arsenic>

NIH link for arsenic

<http://www.sis.nlm.nih.gov/Tox/ARSENIC.htm>

University of Minnesota fact sheet: "Arsenic in Drinking Water"

<http://www.extension.umn.edu/water/arsenic.html>

Wisconsin's Arsenic in Drinking Water & Groundwater Information Page

<http://www.dnr.state.wi.us/org/water/dwg/arsenic/>

Idaho's Arsenic fact sheet

http://www.oversight.state.id.us/ov_library/Contaminant_Fact_Sheets/Arsenic_FactSheet_ANL.pdf